Installation Guide NedZink NOVA COMPOSITE®







Like nothing else... NedZink NOVA COMPOSITE®

NedZink NOVA COMPOSITE panel is a prefabricated sandwich panel, with an LDPE core and covered on the outside with pre-weathered Nova zinc. NOVA COMPOSITE can be used in internal and external applications like, facades, ventilated facades rain screens and interior design. The pre-weathered NedZink Nova on the exterior makes sure that you combine the advantages of zinc with the flatness of a composite panel.

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1. Characteristics of NedZink NOVA COMPOSITE

Characteristics of zinc

NedZink NOVA is NedZink titanium zinc that undergoes a patination process to give a fully natural color. The uniform medium-grey surface of NedZink NOVA originates after a chemical surface treatment following the rolling process. No coating or lacquer layer is applied. The structure and composition of the patina layer that is normally naturally formed by weather influences is simulated, and the natural properties of the titanium zinc are fully retained.

Life span

Thanks to the application of zinc, NOVA COMPOSITE can guaranty a long life span.

Flexibility

NedZink NOVA COMPOSITE is very flexible. NOVA COMPOSITE can be compared with 3mm of solid zinc in terms of flexibility and this with only half the weight.

Flatness

Generally speaking NedZink NOVA COMPOSITE is much smoother than other metal sheet surfaces.

Processing

The processing of NedZink Nova is very similar to aluminum composite. The same tools and fixing materials are being used (screws, clamp connections and sub-structures).

2. Build up

NedZink NOVA is NedZink titanium zinc according to NEN-EN 988 that undergoes a patination process. This is an alloy based on electrolytically cleaned zinc with a purity of min. 99.995 % Zn (Z1 according to EN 1179) with small additions of the alloy elements copper, titanium and aluminum. NedZink NOVA is mainly used for visibly and aesthetically high quality applications in roofs and façades, and associated roof drainage systems and accessories. The chemical composition, mechanical and physical properties and the measurement tolerances are determined in the KOMO product certificate and the product certificate from Lloyd's Register, LRIQS (Approval QIS 122). The defined material properties are checked by an independent and neutral research institute six times a year. This product certification and the ISO 9001:2000 certificate for the quality management system at NedZink assure a constant and uniform high quality, meeting our own standards and far exceeding NEN-EN988.

LDPE Core: Low density polyethylene. The LDPE has the German DIN fire classification standard DIN 4102/1 class B2.





3. Preweathering of Zinc

NedZink NATUREL (natural zinc)

NedZink NATUREL is a durable and aesthetic material that in the course of time develops a unique charm by the progressive patination of roof and façade cladding. The patina layer originates by the formation of a zinc carbonate base, which forms an oxide skin that is also a natural protective coating. This process starts under the influence of the weather conditions. It has a natural course, so the full grey shade is obtained after one to four years.

$Zn + 0_2$	\rightarrow	$ZnO + H_2O$	→	$Zn(OH)_2 + CO_2$	→	ZnCO ₃
Zinc +	→	Zinc oxide +	→	Zinchydroxide +	→	Zinc carbonate
Oxide		Water		Carbonoxide		

NedZink NOVA (prepatinated zinc)

NedZink NOVA is NedZink titanium zinc that undergoes a patination process to give a fully natural colour. The uniform medium-grey surface of NedZink NOVA originates after a chemical surface treatment following the rolling process. No coating or lacquer layer is applied. The structure and composition of the patina layer that is normally naturally formed by weather influences is simulated, and the natural properties of the titanium zinc are fully retained. Because NedZink NOVA is mainly used for aesthetically high quality applications, e.g. for façades, the products are provided with temporary surface protection. This protection prevents minor damage and soiling during processing and assembly, and ensures an optimal appearance after application.





NedZink NATUREL



NedZink NOVA





4. Dimensions and product tolerances

	1		
Panel thickness			4mm
Characteristics	Thickness		
	zinccoil	(mm)	0,5
	Weight 4mm (2x0,5Zn)	(kg/m²)	10
Dimensions	Width	(mm)	1.000
	Length	(mm)	2.000-6.000
Tolerance	Thickness	(mm)	-0/+0,4
	Width	(mm)	-0/+2,0
	Length	(mm)	-0/+4,0
	Diagonal	(mm)	Max 3,0
Technical data	Alloy	NedZink NOVA	Titanium Zinc
		Zinc Zn	min 99,995%
		Copper Cu	0,08-0,17%
		Titane Ti	0,07-0,12%
		Aluminium Al	\leq 0,015%
	Tensile strength (Rm)		min. 150 N/mm ²
	Yield strength elasticity (Rp 0,2)		min. 110 N/mm ²
	E-modulus Zn		> 80.000
Core	Polyethylene-low		
	density (LDPE)	(g/cm ³)	0,92
Temperature	Temperature range	(G0)	-50 tot +80
			2,2 mm per 100 K
	Expansion coefficient	(Zink-coil)	temp. difference
Surface treatment	Visible side		Anti-fingerprint
Fire Class	German DIN		
	standard		B2
Garantee/lifespan	Life span zinc		+/- 100 years
	Garantee composite		10 years

5. Processing Technique

Sawing

NedZink NOVA COMPOSITE panels can easily be sawn with Jig saw and circular sawing machines. When standard tools are used, zinc causes accelerated wear to the cutting edges.

Shearing

NedZink NOVA COMPOSITE is easily sheared with a guillotine. A slight drawing of the zinc cover sheet caused at the impact side should be noted. The clamp on the shear should be fitted with a shock-absorbing rubber pad to prevent damage to the cover sheet. If a sharp cut is wanted, start cutting or punching from the non-visible side. Minimum diameter of the perforation 4 mm, minimal distance between and distance from the edge: 4 mm.

Routing

NedZink NOVA COMPOSITE can be easily routed on conventional routing machines and CNC machines. To avoid pressure marks on the NedZink NOVA COMPOSITE surface, please use plastic or wood vice jaws when chucking the work pieces.

Composite panels can be shaped by means of a simple processing technique. This procedure, the routing and folding technique, enables a variety of shapes and sizes to be manufactured. V-shaped or rectangular grooves are routed on the rear of the panels with disk or end milling cutters, whereby the zinc cover sheet at the front and part of the polyethylene core are retained. The small thickness of the remaining material then allows folding by hand. A brake press is not required. The groove shape determines the radius of the bend. Never bend zinc under $7^{\circ}C \rightarrow$ risk of cracks in the zinc surface.







Bending

NedZink NOVA COMPOSITE can be formed by conventional metal and plastic fabrication methods. Certain specific points should be noted relating to the multilayer structure combining materials of different characteristics. The surface should be protected from damaged by affixing plastic film or inserting polyethylene of 1 - 2 mm thickness or plastic film strips during processing. The spring-back effect experienced when folding sheet metal is larger with NedZink NOVA COMPOSITE. For production series a prototype should be made.



Screwing

Please take the thermal expansion of the panel into account when using threaded fasteners outdoors. To avoid jamming, the hole diameter in the panel must allow for the expansion. Fastening without jamming is possible with fascia screws made of stainless steel with sealing washer that have been approved for construction. The screws must be suitable for the corresponding substructure (please note the information given by the manufacturer). The screws should be tightened with a torque wrench or screwdriver so that the sealing washer is placed on the panel for sealing the bore hole without exerting pressure onto the panel. Multi-step drills or hole gauges having corresponding diameters are used for centrically drilling holes into the panel and the substructure and for centrically fitting the rivet.

NedZink NOVA COMPOSITE panels can be fastened together or joined to other materials with rivets common to aluminum constructions. For outdoor use and for use in areas of high humidity, aluminum blind rivets with stainless steel mandrills should be used to prevent ugly corrosive edges. Please take the thermal expansion of the panel into account (2.2 mm/m/100°C). To avoid jamming, the hole in the panel must be large enough to allow for expansion. Mount the blind rivet in a sufficiently sized hole so the proper contraction and expansion of the panel is assured. Adjust the pressure of the blind rivet to the use, possibly using an









attachment to distribute the pressure over the panel surface to prevent denting. Adjust the length of the blind rivet to the total thickness of the package (panel and material behind it). Test to ensure that the connection meets the requirements. In order to drill centred attachment holes, we recommend using a centring drill that drills both holes during one drilling motion. Please always remove the protective foil in the riveting area prior to riveting.

Gluing

Gluing NedZink NOVA COMPOSITE is possible. Please consult your glue supplier for information on witch type of glue to use for your application

Drilling

NedZink NOVA COMPOSITE can be drilled with twist drills normally used for metal and plastics on machines common for metals. Centre if necessary. To position an overdimensioned hole correctly when drilling attachment holes into a rear construction, we recommend using a countersink.



Screwing

When screwing the panel in the exterior, it is important to ensure that the water-resistance of the façade is maintained. Neoprene underlay rings with stainless-steel upper rings may be used for this purpose. To make free shrinkage and expansion possible, the hole in the panel must be big enough. The screws must be adjusted to the increasing load and meet the requirements. Tighten the screws with a torque wrench to achieve the correct pressure. If the panel is tightened too much, it will not function any more, and will warp and damage will occur. Always make a test piece to check that your tools are suitable for working with NOVA COMPOSITE. When working, always work with the rolling direction of the zinc. That will always be indicated on the back of the NOVA COMPOSITE panel.



6. Installing NOVA COMPOSITE

Generally speaking we recognize 4 basic types of installing NedZink NOVA COMPOSITE Gluing, Clamping, Cassettes, Screwing. Next to these 4 basic types of installing other possibilities exist. In this case always do a test to see if your application is possible. It is always advisable to do a test to find out whether the requirements have been satisfied. There are no simple calculations available to make that determination. Zinc is a very durable metal but you need to take some precautions if you are installing NedZink NOVA COMPOSITE. Make sure that there is no permanent water on the zinc. Drill drainage holes were necessary to avoid this. See this manual (Chapter 10) what not to do with zinc. NedZink can never be held liable for any installation errors.

When detailing cassettes it's important that the zinc patina will not be damaged. If the zinc patina no longer protects the zinc a phenomenon called "white rust" can occur. White rust is not under the guarantee of NedZink NOVA COMPOSITE. Take the right precautions while detailing Cassettes. Avoid standing water. Drill drainage holes of at least 8mm. Leave enough ventilation space between the composite material and the support structure. Avoid any contact with insulation material. With the right precautions you will enjoy NedZink NOVA COMPOSITE for many years. If you have any question on this subject, please contact NedZink.

Gluing



Clamping

Cassettes



Screwing





7. Maintenance

Generally speaking NOVA COMPOSITE does not need any maintenance. The zinc surface will continue to patinate.

This process of patination will heal small surface scratches; they will become invisible trough the natural weathering.







8. Transport and storage

• The pallets must be handled carefully during transport and unloading. Do not handle open pallets.

- Upon delivery the pallets must be examined for any damage due to moisture NOVA COMPOSITE panels that have become wet must be dried to avoid any spots or corrosion forming). Any damage must be reported immediately and confirmed by the forwarding agent.
- Store the pallets so that they are protected against any wetness penetrating due to rain and spray water and avoid any condensation forming (e.g. when transporting cold panels to warmer rooms).
- Store the pallets stacked one over the other .do not store panels standing vertically, with a maximum of 6 pallets of the same format stacked on top of each other (heavy pallets at the bottom).
- Individual panels must be lifted off the pallet by two people holding all four corners and not drawn over each other. Carry the panels vertically. Wear gloves to avoid staining.
- If stacking panels, nothing should be put in between to avoid markings.

The following should be observed as regards to the protective foil:

- Storage exceeding 6 months should be avoided.
- Strong fluctuations in temperature reduce the long-term durability.
- Should the protective foil partially come off during processing, dirtied edges can occur in the course of time.
- Remove protective film as soon as possible after erection. Protective film that remain on panels for an expanded period of exterior exposure may be very difficult to remove

9. Zinc and other materials

Chlorines

Chlorines attack the zinc. Zinc chloride is used as a product to take away the préweathering layer of zinc. If zinc has been in contact with the zinc surface, rinse and clean with water. Make sure that all the chlorine is washed off. When using hydrochloric acid, a solution of hydrogen chloride with water, it is very important to clean up thoroughly because the hydrochloric acid will continue to be active if any is left behind.

Ammoniac

Ammoniac solutions are widely used as a cleaning material. Do not use ammoniac on zinc, if the surface has been in contact with ammoniac or ammoniac solution, rinse and clean

Zinc in a wooded area

When using a zinc roof in a wooded area, contamination of the roof and gutters can occur. Oak leaves are especially harmful to zinc because they contain tannic acid.

Multiplex

Multiplex is built up of veneer layers that have been glued together. If the plates are glued water-tight, we recommend not using it right against the zinc. If condensation should form between the multiplex and the zinc, the moisture will damage the zinc after long exposure. Damage can be prevented by placing a foil with an open weave structure between the multiplex and the zinc.

If wolmanized wood is used, it is important to use the right preservative. If the preservative contains, e.g. free copper components (ascenate), it could damage the zinc. With treated wood, the components that are used to preserve the wood are important; the responsibility therefore belongs to whomever is preserving the wood. Salts containing metals are a major source of damage to zinc. The user should consult the wood supplier to find out whether the preserved wood can be used in combination with zinc.





Western Red Cedar

If Western Red Cedar is used in untreated form, it will leach over time. Western Red Cedar contains corrosive substances. Those substances will come out of the wood and damage the zinc. That will first take the form of dark to black stripes, followed by damage to the zinc. Ultimately, the zinc could decompose. That is only a problem if the wood is applied above the zinc and water runs off over the zinc.

The following woods should not be used in combination with zinc: Larch, Oak, Chestnut, Red or white Cedar, Douglas fir, all woods that produce tannic acid with pH < 5.

Bitumen

Materials that contain bitumen break down under the influence of sunlight (UV rays) in partially soluble substances. Those are acids that increase the level of acidity in the rainwater flowing over the material. If the rainwater then flows over the zinc, the zinc may be damaged. If the volume of water is limited, such as during a drizzle or heavy dew, a high concentration of acid could occur, which will corrode the zinc badly. Such damage can be prevented by protecting the roofing materials containing bitumen from UV rays.

Bitumen-based roofing materials are based on petroleum with modifications, known as APP- and SBS-modified bitumen. Both the bitumen contain petroleum acid and the modifications can damage the zinc. APP roofing materials, in particular, are used in a non-mineralised state, lead to craquelé and leaching of organic acids (carbonic acids). Those acids are very harmful to zinc, dissolving it. That is less with SBS roofing materials because they are mineralised for use and there is less change of craquelé. Here, too, however, the zinc will be damaged, although the damage will be much less.

For most plastic roofing materials, there are no problems with zinc and substance discharges. PVC roofing materials can have a problem with chlorine binding discharges (softeners) that damage the zinc. Damage will only occur if the roofing is applied over the zinc and rainwater runs off over the zinc.



Copper

Copper is more precious (great difference in potential) than zinc. The tension potential between zinc and copper means that copper should not be used above zinc. If that is done, the zinc will break off quickly (electrochemical or tension corrosion). Damage also occurs if the two substances come into direct contact. If water flows from copper to zinc, the zinc will be damaged.

Lead

The potential difference between zinc and lead is small and therefore there should be no difficulties in using those metals together. Partly because of the patination of zinc and lead, a transition zone is created, making the potential difference almost equal. We do recommend treating lead with patination oil immediately after placing it. That will prevent the lead from leaving tracks on the zinc. To prevent damage when using a lead slab in a zinc gutter, using a plastic separator layer, such as EPDM rubber is recommended.

Reed

Zinc cannot be used under a thatched roof because it will be damaged by the humus acids discharging from the leaching thatch. The zinc will literally dissolve. Zink is used for ridges, chimneys (i.e. above the thatch) and roof vent flanges, so water does not run off from other substances onto the zinc.

Double insulated glass

Zinc cladding is often used in combination with (insulating) glass. Often that is used for frame joints with aluminium or wooden frames, but also often for recessed windows above which a zinc cover is installed. When water runs over the glass via the zinc cladding, it will have no effect on the glass construction. we are assuming here that there is no other leaching of other materials via the zinc over the glass and that good-quality insulating glass/float glass has been used.





Glue

If a number of conditions are satisfied, no problems should occur when gluing zinc to wood or plate material. The conditions are that an elastic glue (not based on silicone or other acidic substances) be used. The glue must remain elastic to deal with expansion and contraction.

Glue types that are not recommended are:

- acidic silicones
- acidic epoxies
- urea/melanine glues
- phenoformaldehyde glues

0il

Precipitation from a poorly regulated mazout heating system (oil heating) on the titanium zinc will cause irreparable damage. Regular adjustment of the heating equipment and the use of fuels that comply with the standards will avoid this type of corrosion.

Mineral building materials

Mineral construction materials – such as fresh concrete, calcium, gypsum, cement and mortar - are used in great quantities in building. In combination with moisture, they can damage the zinc. We recommend applying the zinc as late as possible in the building process, thereby reducing the chance of impurities and damage as much as possible.

Between titanium zinc and:

- galvanised steel: caution: in case of wear, rust may occur that will leave tracks on the zinc.
- aluminium: brute aluminium can damage the zinc; in construction, however, aluminium is preferable in muffled or anodised applications.
- stainless steel

10. Details. System 1: Cassettes









































System 2: Clamping









































System 3: Screwing













































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Build on NedZink

As a passionate player in the market for rolled Titanium Zinc (Nederlands TitaanZink or NTZ), NedZink is inspired each day by the demand from architects, designers and users for existing and new possibilities.

NedZink stimulates the achievement of durable and high quality construction projects with bright-rolled, prepatinated and textured zinc. As a trading partner NedZink ensures reliable deliveries, knowledge, quality and service. As a market leader NedZink is an active promoter of creative zinc applications.

NedZink is also aware of its responsibility with regard to people and the environment. Future-oriented business management and investments in up-to-date production techniques reinforce its market position, and create room for new developments.

NedZink is part of the leading international holding company Koramic Investment Group. Production takes place in the Netherlands. There are sales offices in the Netherlands, Belgium and Germany.

NedZink. Think Zink.

